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SCHOOL CROSSING STUDY

FOR STREETS AND HIGHWAYS

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PART VII. TRAFFIC CONTROLS FOR SCHOOL AREAS

A. GENERAL

7A-1 Need for Standards

Traffic control in school areas is a highly sensitive subject. If all the demands of parents and others were met, there would have to be many more police and adult guards for school duty; and many more traffic signals, signs and markings. Such demands, however, are not always in line with actual needs.

Analyses often show that at many locations, school crossing controls requested by parents, teachers and other citizens are unnecessary and costly and tend to lessen the respect for controls that are warranted. It is therefore important to stress the point that regardless of the school location, safe and effective traffic control can best be obtained through the uniform application of realistic policies, practices and standards developed through engineering studies.

Pedestrian safety depends in large measure upon public understanding of accepted methods for efficient traffic control. This principle is never more important than in the control of pedestrians and vehicles in the vicinity of schools. Neither school children nor vehicle operators can be expected to move safely in school zones unless they understand both the need for traffic controls and the ways in which these controls function for their benefit.

Non-uniform procedures and devices cause confusion among pedestrians and vehicle operators, prompt wrong decisions, and can contribute to accidents. In order to achieve uniformity of traffic control in school areas, comparable traffic situations must be treated in the same manner. Each traffic control device and control method described in this part fulfills a specific function related to specific traffic conditions.

The type of school area traffic control used, either warning or regulatory, must be related to the volume and speed of traffic, street width and the number of children crossing. For this reason, the traffic controls necessary in a school area located on a major highway would not be needed on a residential street away from heavy traffic. Yet, the important point to be made is that a uniform approach to school area traffic controls must be developed to assure the use of similar controls for similar situations (which promotes uniform behavior on the part of vehicle operators and pedestrians).

A school route plan for each school serving elementary and kindergarten students is useful in developing uniformity in the use of school area traffic controls. The plan, developed by the school and traffic officials responsible for school pedestrian safety, consists of a simple map showing streets, the school, existing traffic controls, established school routes, and established school crossings. A typical school plan map is shown in figure 7-1.

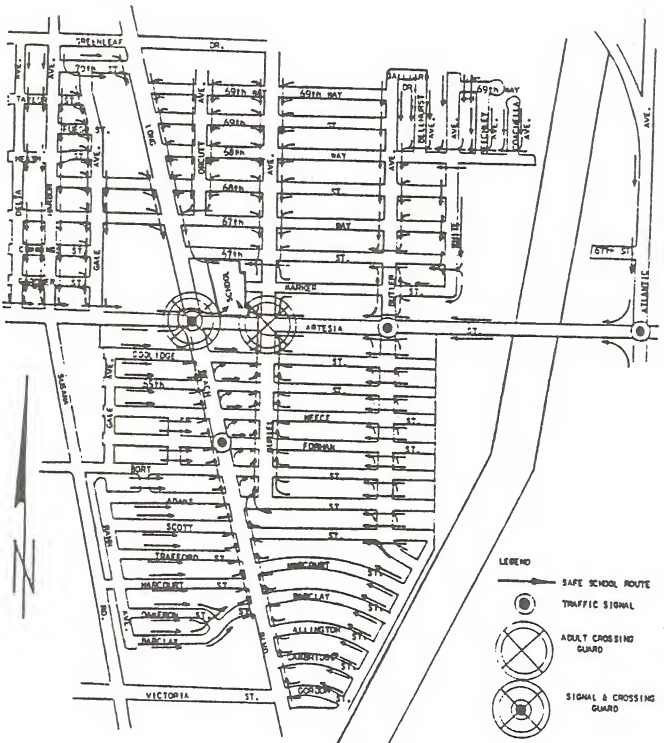


Figure 7-1. Typical school route plan map.

The plan permits the orderly review of school area traffic control needs, and the coordination of school pedestrian safety education and engineering activities.

The following treatment of signs, signals, and markings for school areas is intended to provide in effect a comprehensive handbook in its field, to be applied as a national standard. It establishes general principles to be observed in designing, installing, and maintaining traffic control devices in school areas, and prescribes specific standards where possible. While it constitutes a part of this Manual, it is designed so that it can be used independently, for the convenience of those who are not concerned with the many other phases of traffic control. To that end some material concerning specifications and devices having more general application is repeated here from preceding parts of this Manual.

Reference to reduced speed signs for school areas and crossings is included in this Manual solely for the purpose of standardizing signing for these zones. However, this is not to be considered an endorsement of the practice of mandatory reduced speed zones for all school areas and crossings.

7A-2 School Routes and Established School Crossings

School routes should be planned to take advantage of the protection afforded by existing traffic controls. This planning criterion may make it necessary for children to walk a non-direct, longer distance to an established school crossing located where there is existing traffic control, and to avoid the use of a direct, hazardous crossing where there is no existing traffic control.

Factors to be considered when determining the feasibility of requiring children to walk a longer distance to a crossing (at a location with existing traffic control) are:

1. The availability of adequate, safe sidewalks or off roadway sidewalk areas to and from the location with existing control,

2. The number of children using the crossing,

3. The age levels of the children using the crossing, and

4. The total extra walking distance.

7A-3 School Crossing Control Criteria

Alternate gaps and blockades are formed in the vehicular traffic stream in a pattern particular to each crossing location. For safety, a pedestrian must wait for a gap in traffic that is of sufficient duration to permit a street crossing without interference from vehicular traffic. When the delay between the occurrence of adequate gaps becomes excessive, children may become impatient and endanger themselves by attempting to cross the street during an

inadequate gap. This delay may be considered excessive when the number of adequate gaps in the traffic stream, during the period the children are using a crossing, is less than the number of minutes in that same time period. With this condition (when adequate gaps occur less frequently than an average of one per minute) some form of traffic control is needed which will create in the traffic stream the gaps necessary to reduce the hazard.

A recommended practice for determining the frequency and adequacy of gaps in the vehicular traffic stream is given in the Institute of Transportation Engineers publication, "A Program for School Crossing Protection".

7A-4 Scope

This part sets forth basic principles and prescribes standards to be followed in the design, application, installation and maintenance of all traffic control devices and other controls required for the special pedestrian conditions of school areas. Such devices and controls include signs, signals, markings, adult guards, student patrols, and grade separated crossings.

7A-5 Application of Standards

The standards of this Manual apply to all streets and highways open to public travel regardless of type or the level of governmental agency having jurisdiction.

All traffic control devices used in school areas shall conform to the applicable specifications of this Manual.

7A-6 Engineering Study Required

The decision to use a particular device at a particular location should be made on the basis of an engineering study of the location. Thus, while this Manual provides standards for design and application of traffic control devices, the Manual is not meant to be a substitute for engineering judgment. It is the intent that the provisions of this Manual define the standards for traffic control devices, but shall not be a legal requirement for their installation.

7A-7 Maintenance of Traffic Control Devices

Maintenance of devices must be to high standards to assure that legibility is retained, that the device is visible, that it is functioning properly, and that it is removed if no longer needed.

Devices which are used on a part-time basis shall be in operation only during the time periods they are required.

Regulatory traffic control devices for school areas should be removed, covered or not operated when they are not needed for extended periods of time, such as during summer vacations.

7A-8 Legal Authority

Traffic control devices shall be placed only by the authority of a public body or official having jurisdiction, for the purpose of regulating, warning, or guiding traffic. No traffic control device or its support shall bear any advertising or commercial message, or any other message that is not essential to traffic control.

7A-9 Removal of Confusing Advertising

There should be legal authority to prohibit the display of any unauthorized sign, signal, marking, or device which interferes with the effectiveness of any official traffic control device. The enactment of Section 11-205 of the Uniform Vehicle Code will provide this authority.

7A-10 Meaning of "Shall," "Should" and "May"

In the Manual sections dealing with the design and application of traffic control devices, the words "shall," "should" and "may" are used to describe specific conditions concerning these devices. To clarify the meanings intended in this Manual in the use of these words, the following definitions are given:

1. SHALL - A mandatory condition. Where certain requirements in the design or application of the device are described with the "shall" stipulation, it is mandatory that these requirements be met.

2. SHOULD - An advisory condition. Where the word "should" is used, it is considered to be advisable usage, recommended but not mandatory.

3. MAY - A permissive condition. No requirement for design or application is intended.

B. SIGNS

7B-1 Design of Signs

Uniformity in design includes shape, color, dimensions, symbols, wording, lettering, and illumination or reflectorization. The Federal Highway Administration, on request, will furnish to State and local highway and traffic authorities, sign manufacturers, and similarly interested agencies, detailed drawings of the standard signs illustrated in this Manual. Standardization of these signs does not preclude further improvement by minor changes in the proportion of symbols, stroke width and height of letters, or width of borders. However, all shapes and colors shall be as indicated, all symbols shall be unmistakenly similar to those shown and, where a word message is applicable, the wording shall be as provided herein.

Sometimes a change from word message to symbol requires a significant time period for public education and transition. For this purpose, educational plaques are provided for use beneath new symbol signs.

All symbol signs which are readily recognizable by the public may be erected without educational placques. New warning or regulatory symbol signs not readily recognizable by the public, shall be accompanied by an educational plaque which is to remain in place for at least 3 years after initial installation. No special effort need be made to remove educational plaques as long as they are in serviceable condition.

Illustrations which accompany the text show the specifications for individual sign size, color, and legend. These specifications may not be detailed in the text.

7B-2 Dimensions

The sign dimensions prescribed in this Manual shall be standard for application on public highways. An increase above these standard sizes is desirable where greater legibility or emphasis is needed.

7B-3 Lettering

Sign lettering shall be in upper-case letters in conformance with the Standard Alphabets for Highway Signs Booklet.

7B-4 Sign Borders

All signs illustrated herein have a border of the same color as the legend, at or just inside the edge. When a border is darker than the background, it should be set in from the edge. When the border is lighter, it should extend to the edge of the plate.

7B-5 Illumination and Reflectorization

Ordinarily the signs used for school area traffic control shall be reflectorized or illuminated when regularly scheduled classes begin or end during hours of darkness, and should be reflectorized or illuminated when there is a considerable use of school buildings by children during hours of darkness.

7B-6 Position of Signs

Signs should be placed in positions where they will convey their messages most effectively without restricting lateral clearance or sight distances. Placement therefore should be accommodated to highway design, alignment and roadside development. Signs should have a minimum practical lateral clearance from the edge of the traveled way for safety of vehicles that may leave the roadway and strike the sign supports. Normally signs should not be closer than 6 feet from the edge of a paved shoulder, or if none, 12 feet from the edge of the traveled way.

In urban areas, if the lateral clearance indicated in the preceding paragraph are not practicable, a lesser clearance may be used (not less than 2 feet from the face of the curb). In urban areas, where sidewalk width is limited or existing poles are close to the curb, a clearance of 1 foot from the curb face is permissible.

Portable schools signs shall not be placed within the roadway at any time.

7B-7 Height of Sign

Signs erected at the side of the road in rural districts shall be mounted at a height of at least 5 feet, measured from the bottom of the sign to the level of the roadway edge. In business, commercial and residential districts where parking or pedestrian movement is likely to occur or where there are other obstructions to view, the clearance to the bottom of the sign shall be at least 7 feet.

7B-8 Erection of Signs

Normally signs should be mounted approximately at right angles to the direction of, and facing, the traffic that they are intended to serve.

S1-1
36" x 36"

S2-1
36" x 36"

7B-9 School Advance Sign (S1-1)

The School Advance sign is intended for use in advance of locations where school buildings or grounds are adjacent to the highway. It may also be used in advance of established school crossings not adjacent to a school ground. The School Advance sign shall be used in advance of any installation of the S2-1 School Crossing sign.

Where used, the sign generally shall be erected not less than 150 feet or more than 700 feet in advance of the school grounds or school crossing. The sign shall have a minimum height and width of 36 inches in rural areas, and 30 inches in urban areas.

7B-10 School Crossing Sign (S2-1)

The School Crossing sign is intended for use at established crossings including signalized locations used by pupils going to and from school, except that at crossings controlled by stop signs, the sign should be omitted. Only crossings adjacent to schools and those on established school pedestrian routes shall be signed. When used, the sign shall be erected at the crosswalk, or at the minimum distance possible in advance of the crosswalk. The sign shall have a minimum height and width of 36 inches in rural areas, and 30 inches in urban areas.

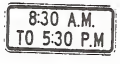
A School Advance sign (sec. 7B-9) shall be used in advance of every School Crossing sign.

S3-1
30" x 30"

7B-11 School Bus Stop Ahead Sign (S3-1)

The School Bus Stop Ahead sign is intended for use in advance of locations where a school bus, when stopped to pick up or discharge passengers, is not visible for a distance of 500 feet in advance. It shall have a minimum 30" x 30" size.

It is not intended that these signs be used everywhere a school bus stops to pick up or discharge passengers but for use only where terrain and roadway features limit the approach sight distance and where there is no opportunity to relocate the stop to another location with adequate visibility.



S4-1
24" x 10"

S4-2
24" x 10"

S4-3
24" x 8"

S4-4
24" x 10"

7B-12 School Speed Limit Signs (S4-1, S4-2, S4-3, S4-4)

The School Speed Limit sign shall be used to indicate the speed limit where a reduced speed zone, for a school area has been established (in accordance with law, after an engineering and traffic investigation) or when a speed limit is specified for such areas by statute. The sign shall be either a fixed-message sign assembly or a variable display type sign.

The fixed message sign assembly shall consist of a top panel (S4-3), 24" x 8" (the legend SCHOOL in black on a yellow background), a Speed Limit sign (R2-1), 24" x 30", and a bottom panel (S4-1) indicating the specific periods of the day and/or days of the week, when the special school speed limit applies. The bottom panel shall be 24" x 10" (or larger if needed) and shall have a black legend on a white background. Alternate legends such as WHEN CHILDREN ARE PRESENT (S4-2) may be used if permitted by law. The numerical speed limit displayed on the sign shall be the limit established by law.

Variable display signs may be used to indicate the special school speed limit. These signs may use blank-out messages or other methods to display the school speed limit only during the periods it applies. A Speed Limit Sign Beacon may also be used, with a WHEN FLASHING sign (S4-4), to identify the periods the school speed limit is in force. The lenses of the Speed Limit Sign Beacon may be positioned within the face of the School Speed Limit sign.

Because of special features, it may not always be practical to make variable display signs conform in all respects to the accepted standards. However, during the periods the school speed limit is in force, their basic shape, message, legend layout, and colors should conform to the standard for the fixed message sign, except that if the sign is internally illuminated, it may have a white legend on a black background.

School Speed Limit
Sign Assembly

Possible Sign
With Speed Limit
Sign Beacon

Variable display signs with flashing beacons should be used for the more critical situations, where greater emphasis of the special school speed limit is needed.

Where practical, consideration should be given to including, on the back of variable display signs, a light or device to indicate the speed limit message is in operation or visible.

The end of an authorized and posted school speed zone shall be marked with a standard Speed Limit sign showing the speed limit for the section of highway which follows or with an END SCHOOL ZONE sign.

7B-13 Parking and Stopping Signs (R7 Series)

Parking signs and other signs governing the stopping and standing of vehicles in school areas cover a very wide variety of regulations and only general specifications can be laid down here. Typical examples are as follows:

1. No Parking 8:00 A.M. to 5:00 P.M. School Days Only.
2. No Stopping 8:00 A.M. to 5:00 P.M. School Days Only.
3. 5 Min. Loading 8:00 A.M. to 5:00 P.M. School Days Only.

The legend on parking signs shall state whatever regulations apply, but the signs shall conform to the standards of shape, color, position and use. Generally, parking signs should display such of the following information as is appropriate, from top to bottom of the sign, in the order listed.

1. Restriction or prohibition.
2. Time of day it is applicable, if not at all hours.
3. Days of week applicable, if not every day.

In addition, there should be a single-headed arrow pointing in the direction the regulation is in effect (if the sign is at the end of a zone) or a double-headed arrow pointing both ways (if the sign is at an intermediate point in the zone). As an alternate to the arrow (if the signs are posted facing traffic at an angle of 90 degrees to the curb line) there may be included on the sign, or on a separate plate below the sign, such legend as BEGIN, END, HERE TO CORNER, HERE TO ALLEY, THIS SIDE OF SIGN, or BETWEEN SIGNS.

Where parking is prohibited at all times or at specified times, parking signs shall have red letters and border on a white background (Parking Prohibition signs); and where only limited-time parking is permitted, or where parking is permitted only in a particular manner, the signs shall have green letters and border (Parking Restriction signs).

For emphasis the word NO or the numeral showing the time limit in hours or minutes may be in a reversed color arrangement in the upper left-hand corner of the sign, i.e., in white on a rectangular area of red or green.

The No Parking symbol (shown in sign R8-3a) may be used as an alternative to the words NO PARKING on signs R7-1, R7-2, R7-3, R7-6, R7-7, and R7-107a. When the symbol sign itself (R8-3a) is used for urban applications, it shall have a minimum and standard size of 12 inches square. The symbol "P" is black, circumscribed in a red circle with a red slash on a white background and black border.

The supplemental educational plaque, NO PARKING, with a red legend and border on a white background, may be used above the symbol.

Parking signs shall have a standard size of 12 inches by 18 inches. If arrows are used to indicate the extent of the restricted zone, the signs should be set at an angle of not less than 30 degrees nor more than 45 degrees with the line of traffic flow to be visible to approaching traffic. If word legends on a separate panel are used to indicate the extent of the restricted zone, the signs should be posted facing traffic at an angle of 90 degrees to the curb line.

C. MARKINGS

7C-1 Functions and Limitations of Markings

Markings have definite and important functions to perform in a proper scheme of school area traffic control. In some cases they are used to supplement the regulations or warnings of other devices such as traffic signs. In other instances they obtain results, solely on their own merits, that cannot be obtained by the use of any other device. In such cases they serve as a very effective means of conveying certain regulations and warnings that could not otherwise be made clearly understandable.

Pavement markings have definite limitations. They are obliterated by snow, may not be clearly visible when wet, and may not be very durable when subjected to heavy traffic. In spite of these limitations, they have the advantage, under favorable conditions, of conveying warnings or information to the driver without diverting his attention from the roadway.

7C-2 Standardization

Each standard marking shall be used only to convey the meaning prescribed for it in this Manual.

7C-3 Crosswalk Lines

Crosswalk lines shall be solid white lines marking both edges of the crosswalk. They shall be not less than 6 inches in width and should not be spaced less than 6 feet apart. Under special circumstances (where no advance stop line is provided or where vehicular speeds exceed 35 MPH or where crosswalks are unexpected) it may be desirable to increase the width of the crosswalk line up to 24" in width. Crosswalk lines on both sides of the crosswalk should extend across the full width of pavement to discourage diagonal walking between crosswalks.

Crosswalks should be marked at all intersections on established routes to school where there is material conflict between vehicles and kindergarten or elementary students (while crossing), where students are permitted to cross between intersections, or where students could not otherwise recognize the proper place to cross.

For added visibility, the area of the crosswalk may be marked with white diagonal lines at a 45^{o} angle or with white longitudinal lines at a 90^{o} angle to the line of the crosswalk. These lines should be approximately 12" to 24" wide and spaced 12" to 24" apart. When diagonal longitudinal lines are used to mark a crosswalk, the transverse crosswalk lines may be omitted. Care should be taken to insure that crosswalks with diagonal or longitudinal lines used at some locations do not weaken or detract from other crosswalks where special emphasis markings are not used.

7C-4 Stop Lines

Stop lines are solid white lines, normally 12 to 24 inches wide, extending across all approach lanes, and (under both urban and rural conditions) indicate the point at which vehicles are required to stop in compliance with a stop sign, traffic signal, officer's direction, or other legal requirement. When used, the stop line should ordinarily be placed 4 feet in advance of and parallel to the nearest crosswalk line.

7C-5 Curb Markings for Parking Restrictions

Since curb markings of yellow and white are used for delineation and visibility, it is usually advisable to establish parking regulations through the installation of standard signs. However, when local authorities prescribe special colors for curb markings as supplemental to standard signs, they may be used.

When signs are not used, intended meaning should be stenciled on the curb.

Signs shall always be used with curb markings in those areas where curb markings are frequently obliterated by accumulations of snow and ice.

7C-6 Word and Symbol Markings

Word and symbol markings on the pavement may be used for the purpose of guiding, warning, or regulating traffic. They should be limited to not more than a total of three lines of words and/or symbols. They shall be white in color.

Word and symbol markings shall not be used for mandatory messages except in support of standard signs.

The letters, numerals, and symbols should be in accordance with the Standard Alphabets and Symbols for Highway Pavement Markings. Letters, symbols and numerals should be 8 feet or more in height; and, if the message consists of more than one word, it should read "up" i.e., the first word should be nearest to the driver. Where approach speeds are low, somewhat smaller characters may be used. The space between lines should be at least four times the height of the characters for low speed roads but not more than ten times the height of the characters under any conditions. Figure 7-2 shows the word SCHOOL in typical, elongated, pavement marking letters.

Pavement messages should preferably be no more than one lane in width except SCHOOL messages may extend to the width of two lanes. When a two-lane width is used the characters should be 10 feet or more in height.

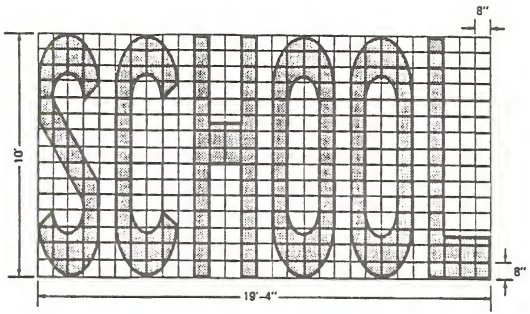


Figure 7-2. Two-lane pavement marking—detail of word "SCHOOL".

Figure 7-3. Single-lane pavement marking—"SCHOOL".

D. SCHOOL AREA TRAFFIC SIGNALS

7D-1 Definition

School signals are standard traffic control signals erected at established school crossings on the basis of a need to create adequate gaps in the vehicular traffic stream for pedestrian crossings.

7D-2 Advantages and Disadvantages

When properly designed, located and operated under conditions that fully warrant their use, school signals usually have either or both of the following advantages:

1. Considering initial and operating costs, school signals over a period of several years represent an economy as compared with police supervision or crossing guards.

2. Under conditions of favorable spacing they can be coordinated with adjacent signals to provide for continuous or nearly continuous movement of vehicular traffic.

Properly designed and warranted signals also have some disadvantages and the following should be considered when choosing a specific means of crossing control:

1. School signal control has a much higher initial cost than police supervision or crossing guards. It should not be considered for locations where several years use cannot be expected.

2. In some circumstances, the school signal control requires supplemental control by an adult guard or school safety patrol.

3. If school signal control is to be properly operated, provision must be made for both periodic and emergency maintenance by capable, trained persons.

7D-3 Standardization

Because of the great mobility of today's traffic and the ever-increasing range of traffic circulation, it is of primary importance that there by national standardization of those features of traffic signals that affect public participation in traffic movement. This applies without exception to signals at school crossings, where instant recognition and understanding of controls is vital to both students and motorists. Deviations and innovations in school areas, however well-accepted by local people, are bound to lead to confusion and disobedience on the part of strangers.

Design, application, location, and operation lend themselves to a certain degree of standardization, and standards for such features are prescribed

herein. A driver or pedestrian must first see signals and then react to their indications. Location and sequence of operation are basic requirements. Signals should be placed where a driver or pedestrian cannot miss seeing them. Standard signal indications and sequences should be used universally so that a signal message can be recognized and heeded at a glance.

7D-4 Warrants

A school signal may be warranted at an established school crossing when a traffic engineering study (of pedestrian group size and available gaps in the vehicular traffic stream) indicates that the number of adequate gaps in the traffic stream during the period the children are using the crossing, is less than the number of minutes in that same time period (sec. 7A-3).

When traffic control signals are installed solely under this warrant:

1. Pedestrians signal indications shall be provided at least for each cross-walk established as a school crossing.

2. At an intersection, the signal normally should be traffic actuated (sec. 7D-7). Intersection installations that can be fitted into progressive systems may use pretimed control.

3. At non-intersection crossings, the signal should be pedestrian actuated, parking and other obstructions to view should be prohibited for at least 100 feet in advance of an 20 feet beyond the crosswalk, and the installation should include suitable standard signs and pavement markings. Special police supervision and/or enforcement should be provided for a new non-intersection location.

A School Advance sign (sec. 7B-9) and a School Crossing sign (sec. 7B-10) may be used at locations where signals are installed under the warrant.

7D-5 Meaning of Signal Indications

In Part IV of this Manual meanings and applications for all traffic signal color and arrow indications are given. In this section the meanings are given only for the signal indications generally used at school crossings and the flashing yellow when a speed limit sign beacon is used as part of a variable display School Speed Limit sign assembly (sec. 7B-12).

The CIRCULAR GREEN indication and the GREEN ARROW indication shall have the following meanings:

1. Traffic, except pedestrians, facing a CIRCULAR GREEN signal may proceed straight through or turn right or left unless a sign at such place prohibits either such turn. But vehicular traffic, including vehicles turning right or left, shall yield the right-of-way to other vehicles and to pedestrians lawfully within the intersection or an adjacent crosswalk at the time such signal is exhibited.

2. Traffic, except pedestrians, facing a GREEN ARROW signal, shown alone or in combination with another indication, may cautiously enter the intersection only to make the movement indicated by such arrow, or such other movement as is permitted by other indications shown at the same time. Such vehicular traffic shall yield the right-of-way to pedestrians lawfully within an adjacent crosswalk and to other traffic lawfully using the intersection.

3. Unless otherwise directed by a pedestrian signal, pedestrians facing any green signal, except when the sole green signal is a turn arrow, may proceed across the roadway within any marked or unmarked crosswalk.

The steady CIRCULAR YELLOW and YELLOW ARROW shall have the following meanings:

1. Traffic, except pedestrians, facing a steady CIRCULAR YELLOW or YELLOW ARROW signal is thereby warned that the related green movement is being terminated or that a red indication will be exhibited immediately thereafter when vehicular traffic shall not enter the intersection.

2. Pedestrians facing a steady CIRCULAR YELLOW or YELLOW ARROW signal, unless otherwise directed by a pedestrian signal, are thereby advised that there is insufficient time to cross the roadway before a red indication is shown and no pedestrian shall then start to cross the roadway.

The steady CIRCULAR RED or RED ARROW shall have the following meanings:

1. Traffic, except pedestrians, facing a steady CIRCULAR RED signal alone shall stop at a clearly marked stop line, but if none, before entering the crosswalk on the near side of the intersection, or if none, then before entering the intersection and shall remain standing until an indication to proceed is shown except as provided in (3) below.

2. Vehicular traffic facing a steady RED ARROW signal shall not enter the intersection to make the movement indicated by the arrow and, unless entering the intersection to make a movement permitted by another signal, shall stop at a clearly marked stop line, but if none, before entering the crosswalk on the near side of the intersection, or if none, then before entering the intersection and shall remain standing until an indication permitting the movement indicated by such red arrow is shown except as provided in (3) below.

3. Except when a sign is in place prohibiting a turn, vehicular traffic facing any steady red signal may cautiously enter the intersection to turn right, or to turn left from a one-way street into a one-way street, after stopping as required by (1) and (2) above. Such vehicular traffic shall yield the right-of-way to pedestrians lawfully within an adjacent crosswalk and to other traffic lawfully using the intersection.

4. Unless otherwise directed by a pedestrian signal, pedestrians facing a steady CIRCULAR RED or RED ARROW signal alone shall not enter the roadway.

Pedestrian signal indications shall have the following meanings:

1. The DON'T WALK indication, steadily illuminated, means that a pedestrian shall not enter the roadway in the direction of the indication.

2. The DON'T WALK indication, while flashing, means that a pedestrian shall not start to cross the roadway in the direction of the indication, but that any pedestrian who has partly completed his crossing during the steady WALK indication shall proceed to a sidewalk, or to a safety island.

3. The WALK indication means that pedestrians facing the signal indication may proceed across the roadway in the direction of the indication. The WALK indication means that there may or may not be possible conflict of pedestrians with turning vehicles.

4. A WALK indication shall not be flashed.

The flashing CIRCULAR YELLOW indication, displayed as a Speed Limit Sign Beacon, shall mean that the school speed limit shown on the sign is in effect.

7D-6 Intersection and Non-Intersection Installations

School signals may be installed at established school crossings at intersection and non-intersection locations under the adequate gap warrant.

Intersection locations have the hazards of turning vehicles and generally require the provision of signal equipment for the control of vehicle traffic on two streets. However, they are less likely to present an element of surprise for drivers, and they may provide a secondary function of improved vehicle access to an arterial street.

Non-intersection locations are free from the hazards of turning vehicles, require vehicle control equipment for one street only, and may offer added convenience to students. However, they can present an element of surprise for drivers who do not expect pedestrian crossings and signal control between intersections. Therefore, special attention should be given to the signal head placement and the signs and markings used at non-intersection locations, to be sure drivers are aware of this special application. Parking should not be allowed within 100 feet in advance of the crosswalk, nor 20 feet beyond.

7D-7 Controllers

School signals which are installed only under the adequate gap warrant (sec. 7D-4) shall be the traffic-actuated type unless an intersection installation is fitted into a progressive system and uses pre-timed control.

The traffic-actuated signal, as its name implies, responds to vehicle or pedestrian actuations, and it is necessary that detector and controller equipment be designed for this service. The general characteristics of the

various types of detectors and controls that have been developed for use with traffic-actuated equipment are described in a supplemental publication.

7D-8 Pedestrian Detectors

Detectors (usually push buttons) for pedestrian-actuated signals should be conveniently located near each end of crosswalks where pedestrian actuation is required. A mounting height of 3 1/2 to 4 feet above the sidewalk has been found best adapted to general usage. Permanent-type signs shall be mounted above or in unit with the detectors, explaining their purpose and use. At certain locations it may be desirable to supplement this sign with a larger sign suspended over the sidewalk to call attention to the push button. Where two crosswalks oriented in different directions, end at or near the same location, the positioning of pedestrian push buttons should clearly indicate which crosswalk signal is actuated by each push button. Additional push button detectors may be required on islands or medians where a pedestrian might become stranded.

Special purpose push buttons to be operated only by authorized persons should include a housing capable of being locked to prevent access by the general public. Instruction signs are not necessary in this case.

A pilot light or other means of indication may be installed with a pedestrian push button and normally shall not be illuminated. Upon actuation, it shall be illuminated until the pedestrian's green or WALK indication is displayed.

7D-9 Operation of Pedestrian Signals

At non-intersection school signal installations, as there is no parallel vehicular movement, the pedestrian crossing is an exclusive interval.

Pedestrians should be assured of sufficient time to cross the roadway at a signalized intersection:

1. Where traffic signals are of the actuated type, control equipment should provide sufficient pedestrian crossing time when there has been a pedestrian actuation, whenever the minimum vehicular time is less than that needed by the pedestrians.

2. Where traffic signals are not of the vehicle-actuated type, pedestrian actuation may be used to provide sufficient pedestrian crossing time, or the vehicular time should be adjusted to provide the crossing time needed by the pedestrians.

3. Under normal conditions, the WALK interval should be at least 4 to 7 seconds in length so that pedestrians will have adequate opportunity to leave the curb, before the clearance interval is shown. The lower values may be appropriate where it is desired to favor the length of an opposing phase and if pedestrian volumes and characteristics do not require the longer interval.

The WALK interval itself need not equal or exceed the total crossing time calculated for the street width, as many pedestrians will complete their crossing during the flashing DON'T WALK clearance interval.

4. A pedestrian clearance interval shall always be provided where pedestrian signal indications are used. It shall consist of a flashing DON'T WALK indication. The duration should be sufficient to allow a pedestrian crossing in the crosswalk to leave the curb and travel to the center of the farthest traveled lane before opposing vehicles receive a green indication. (Normal walking speed is assumed to be 4 feet per second.) On a street with a median width sufficient for pedestrians to wait, it may be desirable to allow only enough pedestrian clearance time on a given phase to clear the crossing from the curb to the median. In the latter case if the signals are pedestrian-actuated, an additional detector shall be provided on the island.

7D-10 Coordination with Adjacent Signals

A school signal at an established school crossing within half a mile of a signal controlling the same traffic should be coordinated with the adjacent signal.

Coordinated operation normally should include both pretimed signals and traffic-actuated signals within the appropriate distances.

7D-11 Vehicle Change Interval

A yellow vehicle change interval shall be used following each CIRCULAR GREEN interval and, where applicable, after each GREEN ARROW interval. In no case shall a CIRCULAR YELLOW indication be displayed in conjunction with the change from CIRCULAR RED to CIRCULAR GREEN.

The exclusive function of the yellow interval shall be to warn traffic of an impending change in the right-of-way assignment.

Yellow vehicle change intervals should have a range of approximately 3 to 6 seconds. Generally the longer intervals are appropriate to higher approach speeds.

7D-12 Location and Placement

The detailed standards and requirements governing the location and placement of all signals, including school signals, are given in Part IV of this Manual. The aspects of these standards and requirements most significant to school signals are given in the following sections.

7D-13 Visibility, Number, and Location of Signal Faces

Each signal face shall be so adjusted that its indications will be of maximum effectiveness to the approaching traffic for which they are intended.

Visors should be used on all signal faces to aid in directing the signal indication specically to approaching traffic, as well as to reduce "sun phantom" resulting from external light entering the lens.

The visibility of signals shall be insured by providing, on each approach to an intersection, a minimum of two signal faces for through traffic. They should be continuously visible from the appropriate distances listed in Table VII-1, up to the stop line, unless a physical obstruction exists.

Table VII-1

85 Percentile Speed Limit	Minimum Visibility Distance (Ft.)
20	175
25	215
30	270
35	325
40	390
45	460
50	540
55	625
60	715

Where physical conditions prevent drivers from having a continuous view of at least two signal indications as specified herein, a suitable sign shall be erected to warn approaching traffic. It may be supplemented by a Hazard Identification Beacon.

Unless physical conditions make it impractical, at least one, and preferably both of the signal faces as required above, shall be located no less than 40 feet nor more than 120 feet beyond the stop line. Such signal faces shall be located between two lines intersecting with the center of the approach lanes at the stop line, one making an angle of 20 degrees to the left of the centerline extended and the other making an angle of 20 degrees to the right of the centerline extended.

When overhead signals are required, the signal faces for any one approach shall not be less than eight feet apart, measured horizontally between centers of faces.

At signalized mid-block crosswalks, there should be at least one signal face over the traveled roadway for each approach. In other respects, a traffic control signal at a mid-block location shall meet the requirements set forth herein.

Pedestrian signal indications should be placed so they attract a pedestrian's attention and they should be readable from as far as the crossing width, to as close as 10 feet.

There shall be pedestrian signals located at each end of each established crosswalk.

The DON'T WALK indication shall be mounted directly above or integral with the WALK indication.

Pedestrian indications may be mounted separately or on the same support with other signal heads. When mounted with other signal heads there shall be a physical separation between the two heads. The pedestrian signal head shall be so positioned and adjusted as to provide maximum visibility at the beginning of the controlled crossing.

The transverse location of a signal face mounted on the top of a post or on a short bracket from a post, shall conform to the requirements in section 7D-15.

7D-14 Height of Signal Faces

The bottom of the housing of a signal face not mounted over a roadway shall not be less than 8 feet or more than 15 feet above the sidewalk or, if none, above the pavement grade of the center of the highway, except that the bottom of center median, near side signal faces may be mounted at a minimum of 4 feet 6 inches above the median island grade.

The bottom of the housing of a signal face suspended over a roadway shall not be less than 15 feet or more than 19 feet above the pavement grade at the center of the roadway.

Within the above limits, optimum visibility and adequate clearance should be the guiding considerations in deciding signal height. Grades on approaching streets may be important factors, and should be considered in determining the most appropriate height.

Pedestrian signal faces shall be mounted with the bottom of the housing not less than 7 feet nor more than 10 feet above the sidewalk level, and so that there is a pedestrian indication in the line of vision of the pedestrian using the crosswalk to which it applies.

7D-15 Transverse Location of Traffic Signal Supports and Controller Cabinets

In the placement of traffic signal supports, primary consideration shall be given to ensuring the proper visibility of traffic signal faces as described in section 7D-13. However, in the interest of safety, traffic signal supports and controller cabinets should be placed as far as practicable from the edge of the traveled way without adversely affecting signal visibility.

Supports for post-mounted signals at the side of a street with curbs shall have a horizontal clearance of not less than two feet from the face of the curb. Where there is no curb, the support for a post-mounted signal shall have a clearance of not less than two feet from the shoulder within the limits of normal vertical clearance.

Signal supports should not obstruct a crosswalk.

No part of a concrete base for a signal support should extend more than 4 inches above the ground level at any point, except that this limitation does not apply to the concrete base for a rigid (non-break-away) support.

On medians, the above minimum clearances for supports should be obtained where practicable. Any median supports which cannot be located with the required clearances should be of the breakaway type or should be guarded if at all practicable.

7D-16 Portable Traffic Control Signals

A portable traffic control signal must meet the physical display and operational requirements of conventional traffic signals described herein. A portable traffic control signal should normally not operate longer than 30 days unless associated with a construction or maintenance project, in which case it shall be removed when no longer needed on the project. It is desirable to use advance signing when employing this device. A portable traffic control signal should be used only when an engineering study so indicates.

7D-17 Area of Control

A traffic control signal shall control traffic only at the intersection or mid-block location where the installation is placed.

On a divided highway with a wide median, the crossing of each roadway may be signalized as a separate intersection.

7D-18 Design Requirements for School Signal Indications

The detailed standards and requirements governing the design signal indications for all signals, including school signals, are given in Part IV of this Manual. The aspects of these standards and requirements most significant to school signals are given in the following sections.

7D-19 Number of Lenses per Signal Face

Each signal face, except in pedestrian signals, shall have at least three lenses, but not more than five. The lenses shall be red, yellow or green in color.

Each pedestrian signal face shall have two indications, white and orange as specified in section 7D-23.

7D-20 Size and Design of Signal Lenses

The aspect of all signal lenses, except in pedestrian signals, shall be circular. There shall be two sizes for lenses, 8 inches and 12 inches nominal diameter.

In no case shall letters or numbers be displayed on the visible part of vehicular signal indications.

All lenses shall conform to Vehicle Traffic Control Signal Heads, 1985 Edition.

7D-21 Arrangement of Lenses in Signal Faces

The lenses in a signal face shall be arranged in a vertical or horizontal straight line, except that in a vertical array lenses of the same color may be arranged horizontally adjacent to each other at right angles to the basic straight line arrangement. Such clusters shall be limited to two identical lenses or two or three different lenses of the same color.

In each signal face, all red lenses in vertical signals shall be located above, and in horizontal signals shall be located to the left of all yellow and green lenses.

The circular yellow lens shall be located between the red lens or lenses and all other lenses.

7D-22 Illumination of Lenses in Vehicular Signal Faces

Each lens shall be illuminated independently. The intensity and distribution of light from each illuminatee signal lens should meet the standards set forth in the following Institute of Transportation Engineers

reports: Vehicle Traffic Control Signal Heads, 1985 Edition and Traffic Signal Lamps, 1980.

7D-23 Pedestrian Indications

Pedestrian signal indications should attract the attention of and be readable to the pedestrian both day and night and at all distances from 10 feet to the full width of the area to be crossed.

All pedestrian indications shall be rectangular in shape and shall consist of the lettered or symbolized messages WALK and DON'T WALK. Only internal illumination shall be used. Symbol designs are set forth in the Standard Highway Signs booklet.

When illuminated, the WALK indication shall be lunar white, conforming to the Standard for Adjustable Face Pedestrian Signal Heads, 1975 with all except the letters or symbols obscured by an opaque material.

When illuminated, the DON'T WALK indication shall be Portland orange, meeting the standards referred to above, with all except the letters or symbols obscured by an opaque material.

When not illuminated, the WALK AND DON'T WALK messages shall not be readily distinguishable by pedestrians at the far end of the crosswalk they control.

For crossings where the distance from the near curb to the pedestrian signal indication is 60 feet or less, the letters, if used, shall be at least 3 inches high or the symbols, if used, shall be at least 6 inches high. For distances over 60 feet, the letters, if used, should be at least 4-1/2 inches high and the symbols, if used, should be at least 9 inches high.

The light source shall be designed and constructed so that in case of an electrical or mechanical failure of the word DON'T, the word WALK of the DON'T WALK message will also remain dark.

7D-24 Speed Limit Sign Beacon

A Speed Limit Sign Beacon is two CIRCULAR YELLOW lens sections each having a visible diameter of not less than six inches, or alternately, one or more CIRCULAR YELLOW lenses, each having a visible diameter of not less than eight inches.

The yellow lens color shall be in accordance with the requirements of the Vehicular Control Signal Heads, Revised 1985.

Where two lens sections are used with school speed limit signs, they may be vertically or horizontally aligned, and may flash either alternately or simultaneously.

Speed Limit Sign Beacons shall be flashed at a rate of not less than 50 nor more than 60 times per minute. The illuminated period of each flash shall not be less than one-half and not more than two-thirds of the total cycle.

All flashing contacts should be equipped with a filter for suppression of radio interference.

When illuminated, the Speed Limit Sign Beacon shall be clearly visible to all drivers it faces for a distance of at least a quarter of a mile under normal atmospheric conditions, unless otherwise physically obstructed.

A Speed Limit Sign Beacon is intended for use with a fixed or variable Speed Limit sign, to indicate that the speed limit shown is in effect. The lenses of a Speed Limit Beacon when used with a School Speed Limit Sign may be positioned within the face of the sign.

7D-25 School Crossings at Existing Signal Installations

Intersections where pre-timed or traffic-actuated signals have been installed on the basis of vehicle warrants (Part IV) may be convenient locations for established school crosswalks. If so, their use should be encouraged and proper allowance should be made in the signal equipment and operation for this use (secs. 7D-27 and 28).

7D-26 Signal Indications

When an existing traffic signal installation is to be used as an established school crossing, pedestrian signals shall be located and mounted in the manner specified in sections 7D-14 and 7D-15.

7D-27 Signal Control

When an existing traffic signal installation is to be used as an established school crossing, the control of the pedestrian signal indications may be accomplished with the timing mechanism normally employed for the traffic signal. For this type of operation, the pedestrian phase or indication is given at a predetermined point during each cycle, or a push button is used to introduce the pedestrian phase or indication (in accordance with the needs of pedestrian traffic).

7D-28 Signal Operation

When an intersection with an existing traffic signal installation is to be used as an established school crossing, the pedestrian crossing interval can be combined with the vehicular movements in one of the four basic ways set forth in section 7D-9.

The timing of the pedestrian crossing phase shall be in conformance with the provisions of section 7D-9.

E. CROSSING SUPERVISION

7E-1 Types of Crossing Supervision

There are two types of school crossing supervision:

1. Adult control of pedestrians and vehicles with adult guards or police officers.

2. Student control of only pedestrians with student patrols.

Recommended practices for the organization, operation and administration of an adult crossing guard program are given in Civilian Guards for School Crossings and Adult School Crossing Guards.

Recommended practices for the organization, administration and operation of a student patrol program are given in Policies and Practices for School Safety Patrols.

7E-2 Adult Guards

Adult guards may be used to provide gaps in traffic at school crossings where an engineering study has shown that adequate gaps must be created (sec. 7A-3).

7E-3 Legal Authority for Adult Guards

Adult guards should be special police officers appointed by the local police agency.

The local police agency should be responsible for the selection, training and supervision of adult guards.

7E-4 Choice of Adult Guards

High standards for selection of adult guards are essential. Adult guards must understand children and in addition should possess the following qualifications:

1. Average intelligence
2. Good physical condition, including sight and hearing
3. Mental alertness
4. Neat appearance
5. Good character
6. Dependable
7. Sense of responsibility for safety of children

7E-5 Uniform of Adult Guards

Adult guards should be uniformed so that motorists and pedestrians can recognize them and respond to their signals. It is recommended that their uniforms be distinctively different from those worn by regular police officers.

During periods of twilight or darkness, adult guards and student patrols should wear either reflective material or reflective clothing.

7E-6 Operating Procedures for Adult Guards

Adult guards should not direct traffic in the usual police regulatory sense. In the control of traffic, they should pick opportune times to create a safe gap. At these times, their presence in the roadway serves as an easily recognized indication that pedestrians are about to use the crosswalk, and that all traffic must stop. Adult crossing guards may use an 18" stop paddle, similar to the one set forth in section 6F-2, except that the paddle shall have "STOP" on one or both sides and that it shall be reflectorized or illuminated when used during hours of darkness. The legend shall be at least 6" series capital letters. When all traffic has stopped, the adult guard allows the children to cross.

7E-7 Police Officers

Police officers should be used for school crossing supervision only in emergency situations on a temporary basis or at very hazardous school crossing where the use of adult guards is not feasible.

7E-8 Student Patrols

Student patrols may be used to direct and control children at crossings near schools where there is no need to create adequate gaps in traffic.

Student patrols may be used to direct and control children at signalized intersections where turning movements are not a problem, and to assist adult guards in the control of children at crossing locations used by large numbers of children.

Student patrols should not be responsible for directing vehicular traffic. They should not function as police.

7E-9 Legal Authority for Student Patrols

Student patrols should be authorized by the local school board. School authorities should be responsible for organizing, instructing and supervising patrols with the assistance of the local police.

7E-10 Choice of Student Patrols

Student patrols should be carefully selected. They should be children from the 5th grade or higher. Leadership and reliability should be determining qualities for patrol membership.

Parental approval should be obtained in writing before a child is used as a member of a student patrol.

7E-11 Operating Procedures for Student Patrols

Student patrols control children, not vehicles. They should stop children back of the curb or edge of the roadway and allow them to cross only when there is an adequate gap in traffic.

Flagging devices used during periods of twilight or darkness shall be reflective or illuminated.

F. GRADE SEPARATED CROSSINGS

7F-1 Function

Grade separated crossings may be used to physically separate the crossing of a very heavy volume of school pedestrian traffic and a heavy vehicular flow.

7F-2 Types of Grade Separated Crossings

Grade separated crossings may be either overpasses or underpasses. The design should follow the guidelines given in the published policies of the American Association of State Highway and Transportation Officials.

Experience has shown that for pedestrian crossings overpasses are more satisfactory than underpasses, as overpasses are easier to maintain and supervise.

7F-3 Criteria for Use of Grade Separated Crossings

Grade separated crossings should be considered only when the physical characteristics of the location make such a structure feasible. If use of the grade separation will be less convenient than an at-grade crossing, barriers or supervision will be needed to assure a satisfactory level of use.

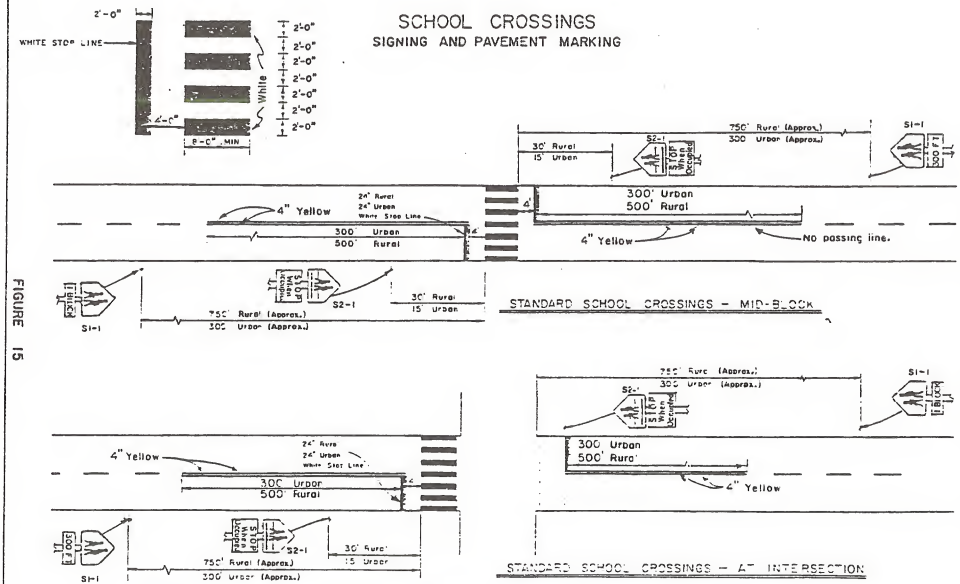
PAVEMENT MARKINGS BY MONTANA DEPARTMENT OF HIGHWAYS

A. SCHOOL CROSSINGS

Pavement markings for school crossings shall be as illustrated in Figure 15. White longitudinal lines at a 90° angle to the crosswalk shall be 2 feet in width, spaced 2 feet apart. The crosswalk shall be a minimum of 8 feet wide and span the full width of pavement. A white stop bar, 2 feet wide, should ordinarily be placed 4 feet in advance of and parallel to the crosswalk and span all approach lanes.

The proper signs should be in place, if possible, at the time the pavement markings are laid down.

SCHOOL CROSSINGS
SIGNING AND PAVEMENT MARKING

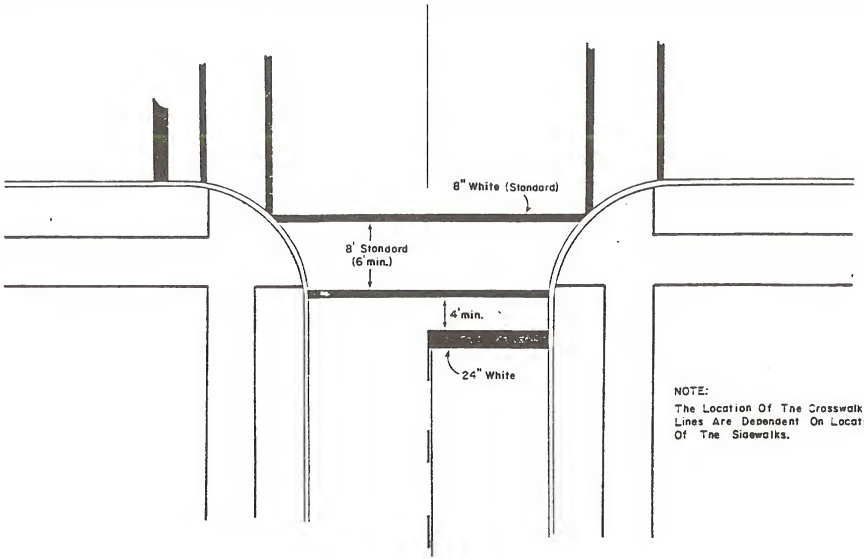


When Advance School Crossing Flashing Beacons (bouncing balls) are mounted on Advance Warning Signs (S1-1) their location may vary from project to project but will normally be placed about 150 feet in advance of the crosswalk.

FIGURE 15

B. PEDESTRIAN CROSSINGS

An engineering study should be used to determine proper crosswalk placement. Optimum locations for crosswalks at points of pedestrian concentration include signalized intersections, intersectional approaches, traffic stops that have been designed to channel pedestrians into approved corridors and all intersections where a significant conflict between pedestrians and vehicles occurs. Crosswalk lines are 2 parallel solid white stripes normally spaced 8 feet apart (6 feet minimum). The widths of the crosswalk lines are normally 8 inches but may be increased to 24 inches in areas where vehicle speeds exceed 35 m.p.h., where an advance stop line is not provided, or in areas where crosswalks would not normally be expected. To discourage improper use of a crosswalk, both lines should extend from face of curb to face of curb or across the full width of pavement. Stop bars, where used, are 2 feet in width and should ordinarily be placed 4 feet in advance of and parallel to the crosswalk.



TYPICAL PAVEMENT MARKINGS
FOR PEDESTRIAN CROSSINGS

FIGURE 16

Acknowledgements

Special appreciation is given to the following organizations for reviewing this manual:

The Montana Department of Highways
The Montana Automobile Association (AAA)
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The Great Falls School District
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The Helena Police Department
The Lewis & Clark County Sheriff's Office

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Foreword

The safety of children on their way to and from school is of concern to all. School traffic safety problems must be handled with a minimum of friction and a maximum of effectiveness. The procedures presented in this manual are a consolidation of current professional thinking on the subject of school crossing protection.

It must be noted, however, that this booklet does not select the device or measure which will best accommodate a specific situation. Instead, a uniform process is outlined for the logical selection of those locations where real hazard exists after which engineering judgment is needed to select a measure that will eliminate or reduce the hazard.

It is our hope that this publication will serve as a resource to school administrators, parent-teacher organizations, and others, in establishing and administering a safer and more uniform School Crossing Protection Program. Such a program must be meaningful to the motorist and is vital to the safety of our children.

If, after reading this manual, you have questions or need additional assistance, please let us know or contact one of the resources listed in the back of this booklet under Appendix B.

ED ARGENBRIGHT
Superintendent of Public Instruction

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INTRODUCTION

No traffic casualty arouses greater public outcry and concern than the injury or death of a child going to or from school. No traffic issue provokes parents and civic leaders to plague highway officials with more persistent demands for signs, signals, and markings than the exposure of children to the lethal potential of the motor vehicle, yet there is no phase in the entire field of traffic control exhibiting as many unique departures and deviations from basic national standards as may be found in the operation and protection of school zones and crossings. This gap in the national program of uniformity invites extravagent procedures and confusing regulations and encourages unsound concessions in the use of all traffic control devices.

The safety of the school child is an ever-pressing problem with which traffic engineers and school administrators must cope daily. Requests are received regularly by the State Highway Department, city traffic engineering departments, and by the police departments for signs, painted crosswalks, traffic signals, adult guards, school safety patrols, and policemen for school crossing protection. These requests come from individual parents, organized groups, school authorities, and local governing bodies. Most such requests are sincere and represent definite concern for child safety. Most persons sponsoring them feel that the measures advocated are vitally necessary and they are sincerely convinced of their effectiveness. Who would question the fact that the welfare of children is the paramount concern of all parents? It is no surprise that parents will demand any measure which they feel will increase, however slightly, the safety of their youngsters. Officials concerned with traffic safety cannot help but sympathize with the fears of parents and it is almost an overwhelming temptation to accede to all these requests. After all, most traffic safety officials are parents too.

Many practices relative to school child protection have evolved throughout Montana and the nation because each community has treated school crossing protection as a special local hazard problem. Consequently, a variety of types of signs, signals, and methods of control have resulted which are confusing and undoubtedly of questionable aid in solving the very problems with which everyone is vitally concerned; in fact, it has been shown through research that some methods now in use are of little value in the light of present day traffic demands.

The state of Montana has recognized for some time that it is imperative that a firm and uniform policy on school child protection should be followed throughout the state. The thorough and comprehensive studies that have been made of school crossings in Montana, the factual studies made elsewhere in the United States, and the successful policies used in a variety of communities are the basis for the methods recommended in this manual. The program of school crossing protection using signs, signals, markings, school safety patrols, and adult control that is recommended in this manual is a sound standard policy which all concerned should follow. Through positive and uniform action, increased respect by the driving public can be obtained for school crossing protection. Sound protection can be established by following

the procedures described herein, as they will reduce driver confusion, regardless of the geographical or political area traveled. When confusion is reduced for the driver, positive, reasonable action follows, and increased safety for school children is the result.

BASIC PRINCIPLES OF SCHOOL CROSSING SAFETY

The importance of teaching children how to cross safely is most basic. Children must be taught early that it is safe to cross any street only when there is a safe gap between vehicles and they must be taught to know the difference between a safe and unsafe gap.

The safety education of each child must be started before school age by the parents and they must continue it for many years. It should be supplemented during school years by school authorities assisted by city and state traffic officials, and it must continue until such time as the growing child becomes capable of accepting the responsibility for his own safety. Admittedly, it is difficult to teach children to look in both directions and to wait for a safe gap in traffic before crossing or entering a street. Difficult as it is--there is no other way. There is no mechanical or electronic device which can assume this responsibility for a child. One can assist children to handle this responsibility in their early years with a school safety patrol or a responsible adult crossing guard at some school crossings for some of the street crossings every child must make, but it is impossible to give any child this protection at all times of the day at every crossing. A program of safety education begun by parents and carried forward by both parents and school authorities can make it possible for children to accept responsibility early in life and give each child a better chance of having an accident-free childhood. The responsibility of parents is imperative to the success of any school child safety program, especially with steadily growing traffic volumes.

Children must be taught that they alone are responsible for their safety and that they must be vigilant at all times. They must be convinced that a traffic sign, a traffic signal, or even a school safety patrol does not relieve them of that responsibility; that all street crossing locations are dangerous; and that only through safe crossing habits and practices will they remain safe.

It is also important that children be taught to walk correctly on sidewalks and, when they are not available, to walk on the shoulder or the far left side of the street or highway. This, too, is a parent responsibility and should also be part of safety education in school. Most children of school age are injured or killed at locations other than at school crossings and other than when going to and from school. The necessity of teaching children safe practices for their use at all street crossings and othe traffic locations and at all times is extremely important, for they need to assume the responsibility for their own safety as soon as possible.

It is true, of course, that the saving of even a few lives and preventing a few injuries is desirable, but it is also possible that protection of the school child pedestrian while going to and from school can be overdone and result in children having a false sense of security in the crossing of streets, which they must do by themselves at other times of the day. It certainly is true that any substantial improvement in the motor vehicle death

and injury rate must occur in areas other than school crossings (See "Pedestrian Accidents, Who, Where, When, Why?", Appendix B.)

The best approach to the school child safety problem lies, then, in the continuous safety education of each child and a responsible School Crossing Protection Program.

A REALISTIC SCHOOL CROSSING PROTECTION PROGRAM

A basic rule which must be followed in the development of a School Crossing Protection Program is:

It is the responsibility of the child, perhaps aided by school safety patrols, to select proper gaps in traffic and to cross streets safely. It is the responsibility of the community to establish restrictive controls to create adequate gaps where they do not exist.

It is not a public responsibility to lead children across the street, or to tell them when to cross gong to and from school. At all other times this remains their responsibility and to assume it part of the time may result in their improper conditioning for assuming this responsibility at other times.

SCHOOL CROSSING PROTECTION COORDINATING COMMITTEE

The first step in establishing a School Crossing Protection Program is to form an official coordinating committee, which should include representatives from the agencies of the community responsible for engineering, enforcement, and the schools. One of the duties of this committee should be that of developing a School Crossing Protection Program or plan. Official representatives of the parent-teacher associations, safety councils, and other interested groups should also be invited to participate.

SCHOOL ROUTE PLAN

The second step in organizing a School Crossing Protection Program is to select logical routes to be used by school children. This can be done by the Coordinating Committee. Competent personnel, such as the City or State Traffic Engineers, can be used to select the routes for the Coordinating Committee.

A school route plan should be developed for each elementary and kindergarten school area with the purpose of providing maximum protection at minimum cost. An accurate and complete map of the area should be made showing

the following information: the location of residences of children; information on sidewalks, shoulders, arterial streets, traffic controls; and natural and easily traversed routes. School routes are selected so as to take advantage of existing sidewalks, adequate shoulders, traffic controls, and natural routes. A route should not be closer than four normal city blocks to another parallel route in most instances, and the number of routes should be kept at a minimum. Normally only one side of a street is a school route, with that side selected which requires the fewest children to cross arterial streets.

All routes should insofar as possible converge on a school site at one of the adjacent intersections and that location will often be a major crossing. This locaton should be determined on the basis of the building entrance, the hazards at the adjacent intersections and the number of children using each of the school routes.

At the beginning of each school year members of the Coordinating Committee should initiate programs to instruct children carefully in the use of school routes, inform parents of the routes, and persuade parents to cooperate fully in getting children to use them.

SCHOOL ROUTE CROSSING

Wherever a school route crosses a street, the Coordinating Committee should establish one of three types of crossings. These three categories are: those where protection is unnecessary or unrealistic, those where limited protection is desirable, and those where additional protection is needed. These three categories will cover all crossings.

No Protection

At crossings where there are sufficient gaps in traffic to permit safe crossing by small groups of children and where the children will not be detained for an unreasonable length of time, school crossing protection is unnecessary. At crossings where there are not sufficient gaps for children to cross safely but where there are only a few children crossing, school crossing protection by a public agency may be uneconomical and unrealistic.

For the latter case the solution to the problem may be for the parents of the few children involved to transport them through the crossing or crossings of concern. This situation normally occurs at long distances from the school in areas where few people live and where private transportation to school is necessary, or where parents can conduct their children across a near-home crossing. The minimum number of school children for which the community will supply a gap-created method is a decision each local community must make. All gap-creating techniques are expensive, and a realistic minimum should be established.

For the first case--where safe gaps are available--any number of conditions will create the necessary safe gaps. A low volume of traffic will naturally provide gaps which permit children to cross. Signals or controls at adjacent intersections may create gaps. The tendency of vehicles to move in groups provides gaps.

At this type of intersection or crossing children should have the conditioning and judgment education they need to develop as a safe pedestrian, and the use of crossing guards is unnecessary. Many crossings will fall into classification.

Limited Protection

Where safe gaps are present but where traffic volumes are substantial, where turning movements are heavy, where speeds are higher, or where larger groups of children are crossing it may be desirable to give limited protection by assigning a trained school safety patrol. The function of the safety patrol is to assist children in the selection of safe gaps and, in an organized manner, act as a leader in guiding groups of children across the street. Although sufficient safe gaps are still appearing, they may not be as frequent; therefore better judgment is needed to select them for larger groups of children. The safety patrol is trained to select these gaps and then permit the children to cross. Student patrols do not control vehicular traffic and should not be permitted to do so. They are not qualified to do so and must not assume this added responsibility. Inasmuch as large groups of children will occur only as one nears the school grounds and since the school patrol must also attend school, such protection is realistic only near the school.

Additional Protection

If adequate gaps are not present to permit safe crossing or if they do not appear in sufficient frequency and if a substantial number of students cross each period, then additional protection is necessary and a public responsibility exists. Where traffic flow is almost continuous, speeds are high, or for some other reason the crossing time is longer than the gap time due to the width of the street or the size of the groups of children, adequate safe gaps must be created.

Provision for adequate gaps may be achieved by several methods. Adult crossing guards, police control, or signalization at the crossing will provide the necessary gaps. However, when adequate gaps do not exist in traffic, a traffic signal should be installed. The use of adult crossing guards and police control should be considered a "temporary measure" for the creation of gaps. The primary function of the type protection used is to control vehicular traffic so as to provide gaps in traffic. The problem of safely crossing the street by proper pedestrian practices remains the responsibility of each school child. Adequate gaps are provided at locations where school routes pass through signalized intersections and no further traffic control is normally required at these crossings.

Crossing Study

After the selection of the school routes, each crossing must be analyzed and classified as requiring no protection, limited protection, or additional protection. This is done after making an analysis of each crossing from data obtained in a survey of these crossings. Any number of persons may be called upon to assist in the survey of these intersections. Personnel from the schools, the police, the highway department, the parent-teachers associations, or other persons may be utilized (see Appendix B). These surveys must be conducted at the times of day when children cross or would cross the intersection. They should be conducted under the sponsorship of the Coordinating Committee and should be conducted under the sponsorship of the Coordinating Committee and should be performed under the direction of the Traffic Unit Manager of the Montana Department of Highways (see Appendix B).

A survey involves counting of the number of vehicles, a determination of the length and spacing of gaps in traffic, the width of the street and the maximum number of children crossing the street at each gap interval.

Volume Count. The volume count includes all vehicles which cross a path that children would use at the crossing. This includes vehicles approaching the crossing from both directions and vehicles turning to cross this path. The crossing from both directions and vehicles turning to cross this path. The count should be made for each fifteen minutes during each period when children use the crossing. The count may be made by manually tallying the vehicles which cross a school route for each 15-minute period or it may be made by 15-minute automatic recording counters placed at the crossing. The highest 15-minute count obtained for any period when students would normally cross is the volume used for the crossing.

Width of Street. The width of the street is the curb-to-curb width for streets or roads without a median strip greater than or equal to six (6) feet in width. For streets with median strips greater than or equal to six (6) feet, the width of the street is the curb-to-curb width on each side of the median. In the latter case, children make two separate crossings of the road--first from the curb to the median and then the median to the far side curb. For streets without curbs the width should be measured from six feet from the edge of the pavement to a corresponding point on the opposite side.

Size of Groups Crossing. The number of children who use the crossing is determined, preferably from actual counts of children using the crossing or by an evaluation of where children live who would use the crossing. The total number crossing during each period of the day and the times of the day during which these crossings are made or should be made are determined for each location. This will be different for crossings distant from the school than for crossings near the school. The typical maximum number of children who cross at one time should be determined from actual observation. The term "typical maximum" is not meant to be the absolute rare maximum observed, but the maximum number which occurs at least once during most days. The size of the group will typically be larger near the schools than for crossings farther from the school.

Determination of Safe Gap. A safe gap permits a child to perceive that the crossing can be safely made and then to cross with some margin of safety. Most grade school children will require no longer than three (3) seconds to perceive a safe crossing and to react. They will walk at a rate of approximately 3.5 feet per second. If there is a group of children, the entire group must be able to complete the crossing safely.

The pedestrian counts should be made on a normal school day during the heaviest hour of crossing activity in the morning or afternoon, but preferably both.

As indicated, the pavement width, W, is the curb-to-curb width as measured at the crossing under study. If the roadway is divided and the center island is wide enough for the maximum sized group of pedestrians to stand on it in safety, the curb-to-curb width of only one roadway is used for W. This information can be obtained at the same time the pedestrian group size study is made.

Before the field survey is made to determine pedestrian delay time at the study location, it is necessary to find the minimum length (in seconds) of a gap in traffic which will permit an 85th-percentile group of pedestrians to cross the street of width W. This minimum gap in traffic, known as the Adequate Gap Time, G, includes both perception and reaction time and the time needed to cross the roadway without coming in conflict with passing vehicles.

Adequate Gap Times in Seconds

Roadway Width, W	Number of Rows, N									
	1	2	3	4	5	6	7	8	9	10
16-19	8	10	12	14	16	18	20	22	24	26
20-22	9	11	13	15	17	19	21	23	25	27
23-26	10	12	14	16	18	20	22	24	26	28
27-29	11	13	15	17	19	21	23	25	27	29
30-33	12	14	16	18	20	22	24	26	28	30
34-36	13	15	17	19	21	23	25	27	29	31
37-40	14	16	18	20	22	24	26	28	30	32
41-43	15	17	19	21	23	25	27	29	31	33
44-47	16	18	20	22	24	26	28	30	32	34
48-50	17	19	21	23	25	27	29	31	33	35
51-54	18	20	22	24	26	28	30	32	34	36
55-57	19	21	23	25	27	29	31	33	35	37
58-61	20	22	24	26	28	30	32	34	36	38
65-68	22	24	26	28	30	32	34	36	38	40
75-80	25	27	29	31	33	35	37	39	41	43

Source: "A Program for School Crossing Protection," A Recommended Practice of the Institute of Traffic Engineers, Traffic Engineering, Institute of Traffic Engineers, Vol. 33, No. 1 (October, 1982), p. 52

The Adequate Gap Time may be selected from the above table or it may be computed using the following equation (in either case the values for W and N are those determined in the Pedestrian Group Size Study):

$$G = \frac{W}{3.5} + 3 + (N-1)2$$

where

G = adequate gap time in seconds

$\frac{W}{3.5}$ = crossing time in seconds (critical width in feet of the pavement to be crossed, W, divided by the assumed juvenile pedestrian walking speed of 3.5 feet per second)

3 = pedestrian perception and reaction time (the number of seconds required for a child to look both ways, make a decision, and commence to walk across the street)

(N-1)2 = pedestrian clearance time (additional seconds of time required to clear large groups of children from the roadway). Children are assumed to cross the roadway in rows of five with two-second time intervals between each row. The clearance time interval is equal to (N-1)2 where N is the number of rows, 1 represents the first row and 2 the time interval between rows.

After the Adequate Gap Time has been selected, the field study to determine the actual delay time to pedestrians by passing traffic can be undertaken. This study actually measures the time intervals between passing vehicles. Those intervals or traffic gaps that are equal to or greater than the Adequate Gap Time are the periods when children must cross the roadway. The intervals between these gaps are the delay gaps, the sum of which is the Actual Pedestrian Delay.

Either the Graphic Recorder Method or the Metronome Method may be used to determine the gaps in the traffic stream. Naturally, if the entire roadway must be crossed once the pedestrian leaves the curb, traffic flow in all lanes regardless of direction must be considered together.

When the field survey is completed, the total time of all gaps when pedestrians could cross is found by adding together the length in seconds of each gap which was equal to or greater than the Adequate Gap Time, G. This figure is known as t and is subtracted from the total survey time in seconds,

T. The following equation is then used to determine the percentage of actual pedestrian delay, D:

$$D \text{ (in percent)} = \frac{T - t}{T} \quad 100$$

Crossing Classification. Using the data collected during the survey and the procedure for safe gap determination, each crossing is next classified as no protection, limited protection, and additional protection. Each crossing that has a traffic volume for adequate safe gaps is automatically classified as a "No Protection" crossing. School children crossing at a "No Protection" crossing will cross singly or in a small group and they will individually determine when it is safe to cross. A crossing will also be classified as "No Protection" where only a few children cross at the crossing during a complete crossing period.

Crossings which have a traffic volume which approaches the maximum volume for a safe crossing are to be considered for limited protection by the School Coordinating Committee. If such a crossing has few students using it or it is far from the school, it should be classified as "No Protection." If the crossing has a large number of students crossing it, the speeds are high, and if the crossing is close to the school or if the crossing is complex, it should be classified as a "Limited Protection" crossing and the School Patrol should be assigned to assist students crossing at this location.

Crossings which have a substantial number of students using the crossing and where adequate safe gaps do not exist must be classified as "Additional Protection" crossings. This additional crossing protection is normally provided by a trained adult crossing guard or a community policeman until a traffic signal can be installed. Traffic signals shold be used to create the necessary gaps only if the traffic volumes and/or other factors at the intersection warrant their installation. The appropriate warrants for signals including warrants for pedestrian signals are clearly defined in the Manual on Uniform Traffic Control Devices. Special locations may permit the use of pedestrian-actuated signals to create these gaps.

THE SCHOOL PATROL

School patrols should be carefully selected and thoroughly trained. School safety patrol personnel should be children who are nine years of age or more, and should be especially trained for the patrol job. Parental approval should be obtained in writing before a child is used as a school patrol member. He should be instructed to never direct vehicular traffic in any way. He must stop the children back of the curb or edge of the roadway and allow them to cross only when no traffic is approaching from either direction. If a stop sign or signal is in place at the crossing, he must control or stop the children until traffic has stopped for the sign or signal. He is to report at once to the principal the names of children who fail to obey his direction or those who fail to cross in an orderly manner. In rural areas, a crossing should not be established where sight distance is less than one fourth of a mile in both directions; however, a speed study should be conducted in order to determine minimum sight distances. School patrols shold be used only near the school they attend and they must be adequately supervised.

Recommended training and practices of the school safety patrol are contained in the SAFETY PATROL HANDBOOK AND SUPERVISOR'S KIT issued by the American Automobile Association. School patrols are to be identified and trained as indicated in this handbook. This material is available from the Montana Automobile Association (see Appendix B).

ADULT CROSSING GUARDS

If inadequate vehicular control for school crossings is to be eliminated where it is not warranted, there must be an acceptable practice which will improve driver respect and assure greater safety and protection for the school child who must cross a major street or highway. Such a practice, of course, must be built on a sustained program of safety education by parents and teachers so the child can assume the responsibility for his own safety as early as possible.

Such a practice is the use of adult crossing guards for most locations where additional protection is required at school crossings, at locations where additional safe gaps need to be created. An adult of mature judgment can also inform, train, and guide the very young child in the essentials of good walking and crossing habits. Adult control coupled with adequate warning signs for school crossings will assure driver respect and safety for school children.

Adult guards, however, should be used only on a temporary basis where the crossing requires that safe gaps be created and these adult guards must be thoroughly trained and supervised. A manual titled HANDBOOK FOR ADULT SCHOOL CROSSING GUARDS by the American Automobile Association, Washington, D.C. should be used to develop a program of selection and training of adult guards.

This handbook is available from the Montana Automobile Association (see Appendix B). Adult crossing guards can be effectively used as an educational tool for any crossing location.

TRAFFIC CONTROL DEVICES

Traffic control devices of various types are used in conjunction with school crossings to provide protection to the child and to provide warning and information to the motorist. All markings and signs used should be uniform as specified in the MUTCD of the Department of Highways and should be carefully erected and maintained.

Crosswalks

A crosswalk should be marked and well maintained at all crossings on a school route. Crossings should usually be only across one leg of an intersection and should be painted only on the leg which is a part of the route. At intersections where two or more school routes join, more than one leg of the intersection will be a crossing but in no case should all four legs of an intersection be crossed. Special colors for school crosswalks are not required or desirable as parents and children should be adequately informed of the location of school routes before children use them. Crosswalks should be marked with paint or a more permanent marking.

All crossings by children should be made only within the marked crosswalks and should be rigidly enforced.

School Signs

A lack of uniformity of signs creates disrespect for all signs. Unique signs may create a temporary beneficial effect, but this rapidly disappears and they too are ignored. Only uniform signs should be employed and only those school signs which are necessary should be used. All non-uniform signs are illegal.

The use of adequately designed school signs as warning devices for vehicular traffic at school crossing locations is well recognized by most traffic safety and school officials, and certainly fits into every plan of school crossing protection and control. The signs determined by the Traffic Unit of the Montana Department of Highways for use in school crossing protection and control are standard signs which can be easily recognized by motorists. These signs are accepted as uniform throughout the United States, and as such enjoy a high degree of voluntary obedience.

The installation of a yellow bouncing ball flasher at a school crossing is always in accordance with current standards or acceptable design

principles. This type of device may be used when the following conditions exist: an average of one safe crossing gap per minute during the average peak pedestrian crossing period and a minimum crossing of 50 school-age pedestrians during the crossing period. When any of the following are present, the pedestrians volume portion of the warrant may be 70 percent as determined by engineering judgment: (1) sight distance falls below minimum stopping sight distance for existing approach speeds; (2) approach speeds exceed 45 miles per hour; and (3) the crossing is on a four or more lane facility, except when facility is divided by a median of six feet or more.

Bouncing ball flashers shall be in operation only during those hours in which school children use the crossing.

PEDESTRIAN-ACTUATED TRAFFIC SIGNALS

A traffic control signal may be warranted at an established school crossing when a traffic engineering study of the frequency and adequacy of gaps in the vehicular traffic stream as related to the number and size of groups of school children at the school crossing shows that the number of adequate gaps in the traffic stream during the period when the children are using the crossing is less than the number of minutes in the same period.

When traffic control signals are installed entirely under this warrant:

1. Pedestrian indications shall be provided at least for each crosswalk established as a school crossing.

2. At an intersection, the signal normally should be traffic-actuated. As a minimum, it should be semi-traffic-actuated, but full actuation with detectors on all approaches may be desirable. Intersection installations that can be fitted into progressive signal systems may have pretimed control.

3. At non-intersection crossings, the signal shuld be pedestrian-actuated, parking and other obstructions to view should be prohibited for at least 100 feet in advance of and 20 feet beyond the crosswalk, and the installation should include suitable standard signs and pavement markings. Special police supervision and/or enforcement should be provided for a new non-intersection installation.

UNDERPASSES AND OVERPASSES

These special pedestrian facilities are generally warranted only at locations where especially heavy volumes of school traffic must cross a heavy vehicular flow. An underpass or overpass should only be constructed when the problem cannot be solved in some simpler and more economical manner.

Experience has shown that in almost every instance facilities of this type are not voluntarily used by school children. On the other hand if the facility offers a more convenient path than a crossing at street grade, the likelihood of use by school children is good. If the situation, however, requires descending to a different level and then ascending to the original level, or vice versa, the chance of adequate use is not good unless barriers are erected or adult guards, policemen, other adults, or the school safety patrol are used to force school children to use the facility. Ramps, where space and location permit their construction, are usually more satisfactory than steps as they are safer and also permit the use of bicycles and wheel chairs.

Assuming the need exists, decision as to whether to use an overpass or an underpass is generally determined by the physical layout of the area. Overpasses have certain advantages over underpasses in that they usually can be constructed for considerably less money, and excavating work for underpasses is often complicated by sewers, water mains, utility conduits, etc. Underpasses also require lighting, forced ventilation, drainage, and enforcement of sanitary and moral laws.

School overpasses or underpasses may be warranted at specific school crossings only when all of the following conditions are met:

1. When the number of adequate gaps in the traffic stream, during the period the children are using the crosswalks, is less than the number of minutes in that same period of time or when children are prohibited from crossing at grade.

2. When the general conditions that require the school crossing are sufficiently permanent to justify such structures.

3. When an economic comparison between these structures and other methods indicates that overpasses or underpasses are justified from a long range standpoint.

4. When the physical characteristics of the location make such structures feasible.

5. When the initial cost of such improvements does not limit available funds to the point where other essential school crossing protection is neglected.

6. When such structures serve other pedestrians and a sizable number of school children.

7. When there is no possibility of eliminating the need for such structures by the replanning of school routes or school districts.

PARKING RESTRICTIONS

All parking should be prohibited on the school side of all streets directly adjacent to the school from before the time children begin to arrive at the school in the morning until after most of the children leave in the evening. No parking or standing or even stopping should be permitted at any time directly in front of any entrance to the school, and these regulations should be strictly enforced. Parents should be instructed to pick up their children at a location which does not require crossing the street and which is not directly in front of any school entrance.

SCHOOL HOURS

The times of school opening and closing shuld be determined after consideration of all pertinent factors, including the possible minimization of crossing conflicts by scheduling school opening and closing so that walking to and from school does not occur during periods of heavy traffic movements. This is especially important in the early morning hours when darkness and fog may result in poor visibility and a conflict with the morning traffic volume peak. If, for example, the morning peak for traffic occurs just prior to 8 a.m. in a school area, it would be wise to schedule the opening of school so that no child would need to start to school until after 8 a.m.

CONCLUSION

The solution of the problem of school crossing protection does not rest entirely on the strict control of street or highway vehicular traffic. Rather, the solution to the problem lies more in the development of an informed child as to proper walking habits and as to the hazards which exist on every street and highway. A sound safety education program in the home and school will contribute much more toward the protection of school children, through the development of their own initiative and their own vigilance, than the dependence on protective devices in the form of signs or signals.

The plans of vehicular warning and control recommended by this manual will augment the necessary education and adult control; all of which, if fitted into a workable program, will increase respect for school crossing protection and definitely provide for the best protection of school children while enroute to and from school as well as at other times of the day.

APPENDIX A
MONTANA LAW

School Laws of Montana
20-1-408 School Safety Patrols

(1) The trustees of any district or the administration of any private school may organize and supervise school safety patrols for a school under their authority. The purpose of school safety patrols is to influence and encourage other pupils of the school to refrain from crossing public highways at points other than regular crossings and to direct pupils as to when and where to cross highways.

(2) The school safety patrol shall be formed from the children of the school who are 9 years of age or more or, if there are none, who are of the highest grade of such school. Before any child may serve on the school safety patrol, the parent or guardian of such child shall give written consent for his child to serve on the school safety patrol.

(3) No liability attaches to a member of the school safety patrol or parent or guardian by virtue of the organization, maintenance, or operation of such school safety patrol because of injury sustained by any pupil.

(4) Identification and operation of school safety patrol shall be uniform throughout the state, and the method of identification and signals to be used shall be as prescribed by the Superintendent of Public Instruction in cooperation with the Montana Division of Motor Vehicles.

(5) Any municipality, city or town of this state may provide for the training of members of the school safety patrol at any authorized school patrol camp located in this state and may pay the expense necessarily incurred in providing such training out of any funds available for such purpose.

Montana Code Annotated
Title 61
Motor Vehicles
Part 5
Pedestrian Traffic

61-8-502. Pedestrians' Right-of-Way in Crosswalk ...

(3) It is unlawful for any person to drive a motor vehicle through a column of school children crossing a street or highway or past a member of the school safety patrol while the member of the school safety patrol is directing the movement of children across a street or highway and while the school safety patrol member is holding his official signal in the stop position.

APPENDIX B
RESOURCE LIST

People and Agencies to Help:	Materials Available:
Greg Jackson Traffic Unit Manager Department of Highways 2701 Prospect Avenue Helena, MT 59620 Phone: 444-6217	1. Pedestrian Accidents: Who, Where, When, Why? A Study 2. Sign Index. Shows all traffic signs used in Montana. 3. MUTCD. Manual on Uniform Traffic Control Devices for streets and highways. This manual outlines the basic principles that govern the design and usage of traffic control devices.
Harry Lauer Engineering Bureau Chief Highway Traffic Safety Division Department of Justice 303 N. Roberts Helena, MT 59620 Phone: 444-3412	1. Adult School Crossing Supervisor Program. A Final Report of an Eight-City Montana Program. 2. MUTCD
Curt Hahn, Specialist Traffic Education Programs Office of Public Instruction State Capitol Helena, MT 59620 Phone: 444-4432	1. School Crossing Protection Manual 2. Safety films (16 mm)
Public Relations, Personnel Montana Automobile Association 607 N. Lamborn Helena, MT 59601 Phone: 442-5920	1. School Safety Patrol Member's Handbook 2. Handbook for Adult School Crossing Guards 3. Policies and Practices for Safety Patrols 4. Do School Safety Patrols Fit into Today's Educational System? 5. Is Liability a Factor Affecting School Safety Patrol Programs Today? 6. School Safety Patrol Teacher Supervisor's Kit 7. Safety films (16 mm)